

Mute Swan 1978

Title

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Description and Summary of Results

Populations of Mute Swan *Cygnus olor* had been showing dramatic increases in many European countries, particularly around the Baltic, and the International Waterfowl Research Bureau tried to persuade the majority of countries with substantial populations of Mute Swans to co-operate in a census, and chose 1978 to do this. The BTO undertook to do this for Britain in conjunction with the Wildfowl Trust.

The Mute Swan is Britain's largest, most conspicuous and most easily recognisable bird. The only complete national census was carried out in the summer of 1955, with a partial repeat the following year, when the British Mute Swan population was found to be about 19000 birds. There were reliable indications of considerable increases taking place in many areas, and it was a series of complaints from farming and fishing interests which stimulated the next census, held in the summer of 1961. This time a complete census was not attempted, but a number of counties in England and Wales were selected to provide a basis of comparison with 1955. The population had also been monitored during this time by the monthly winter wildfowl counts of the Wildfowl Trust. Together, these revealed that the Mute Swan population had continued to climb quite fast through the late 1950s, reaching a peak of perhaps 21000-23000 in about 1959. A drop was recorded between then and 1961, to give an extrapolated total of around 19000 or close to the 1955-56 level.

Coverage in 1978 was achieved for 75% of the 781 10-km squares selected for survey. A further 542 squares were censused, bringing the grand total to 1126 or 42% of all squares in Britain. Gaps in the coverage were small compared to what was achieved. The additional squares covered were heavily concentrated in the southern half of the country, though with some northern outliers – those covered in full in 1961 were deliberately chosen to include several with large populations of swans, and it was these counties from which full cover was again requested (and in many cases achieved) in 1978.

The total number of breeding and territorial pairs found during the census was 2014. Even allowing for the exceptionally high densities in some 10-km squares, there was a marked difference in density between the south and east of England and the rest of the country, with the exception of NW Scotland and Orkney. A density of over 2.5 breeding and territorial pairs per occupied 10-km square were found all along the south coast and in the centre and east of England north to Yorkshire. Density in the western half of England and Wales, in NW and N England and most of Scotland, was much lower. Apart from the southern half of the Outer Hebrides (with a large, discrete population) only the lowland fringe facing the Moray Firth and Orkney, had a density equivalent to that in south and east England.

There was a decrease of 29.4% from the number of squares which had held breeding swans in the 1968-1972 breeding atlas. The losses occurred fairly evenly over the whole range although they were especially obvious in the west Midlands, Norfolk, Kent and parts of southern Scotland.

The grand total of swans found in 1978, including extrapolations of breeding birds, was 16741. Further inspection of the data, in particular allowing for counties in which the cover was too poor to give a realistic extrapolation from the sample, and for under-counted flocks of non-breeders, a more probable total was around 18400. This is similar to the 1955-1956 total of 17850-19250. However, following reanalysis and a new detailed investigation of the coverage achieved in both surveys it is likely that the 1955-56 figure more realistically should be 19900-21600 which means an overall decrease to 1978 of 8-15%.

Methods of Data Capture

This was the first BTO survey to employ a sampling technique. The 10-km squares of the National Grid, which had been used successfully for the 1968-1972 breeding atlas, were used as the unit and would allow straightforward extrapolation to a national total and direct comparison to the distribution found in the atlas. A random selection of 50% of squares which had found swans in the atlas was made. The selection was done within each 100-km square and tried to ensure that the spread reflected the range in the 100-km square. In addition to the 50% sample, it was felt that considerable extra benefit could be derived from having at least some areas covered in full. The preferred areas were those counties which had been censused in both 1955 and 1961.

Observers were asked to mark the position of each nest or territorial pair which they found within that 10-km square. On the reverse of the form they were asked to fill in details of the position of the nest, its habitat, and whether the birds were incubating, had young, or the nest had been destroyed. It was decided not to request observers to obtain details of clutch size, partly because many nests, on islands for example, were not easily approached, and partly because it was felt that observers could not fairly be asked to suffer bruising, if nothing worse, from an angry swan, in the cause of science.

A second form was for listing the locality, date and numbers of birds in any non-breeding flocks located. Because this was felt to be less amenable to the sampling technique it was decided to ask for complete cover of non-breeding flocks across the country. It was thought that, as the great majority of these were well known, complete coverage would not be difficult to achieve.

The census was restricted to the months of April and May for breeding birds, and to April for non-breeders. Breeding pairs are invariably on their territory by the beginning of April, while those pairs which might be holding a territory but not breeding are likely to be present throughout April and May before many of them leave to join a moulting flock. Non-breeding flocks have been found by ringing studies to be at their most stable during April, becoming more variable through May. Observations outside these periods were accepted, though some, largely May and June records of flocks, were not used.

Purpose of Data Capture

To obtain as accurate a count as possible of the number of adult Mute Swans in Britain, both of breeding and non-breeding birds.

Geographic Coverage

All of Britain with most covered for breeding birds by a sample of 50% of 10-km squares which had been occupied during the 1968-1972 breeding atlas.

Temporal Coverage

The breeding season of 1978, with counts of breeding pairs in April or May and of non-breeding flocks in April.

Other Interested parties

This survey was organised and run by Malcolm Ogilvie while he held a post at the Wildfowl Trust funded by the Nature Conservancy Council.

Organiser(s)

Malcolm Ogilvie as part of his job employed by the Wildfowl Trust.

Current Staff Contact

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Publications

The main report for the survey is:

Ogilvie, M.A. 1981. The Mute Swan in Britain, 1978. *Bird Study* 28: 87-106.

The survey was noticed in *BTO News* numbers 87, 88, 91 and 110.

Available from NBN?

No.

Computer data -- location

BTO Windows network central area.

Computer data -- outline contents

Data files for the 1978, 1983 and 1990 surveys and various programs used to analyse these.

Computer data -- description of contents

The root directory contains:

Extract78.out (and similar for the 1983 and 1990 surveys). This has 3 columns: a list of 10-km squares, the number of pairs and the third is unclear. For some the number of pairs is -1 and probably means not covered and not specified as being unsuitable.

A data directory for the 1978 survey contains 3 files called xxxx.apr xxxx.jun xxxx.sor although the differences are not clear. Each contains a long string of characters which appear to be:

cols 1-4 10-km square; col 5 Site (A is the first pair or flock in the 10-km square, B the second etc, if blank appears to be a summary of the 10-km square which may or may not have birds in); cols 7-46 Site Name; cols 47-54 BTO Region; cols 55-62 Starting (or Central) Grid Reference (for river stretches); cols 63-70 Ending Grid Ref (for river stretches); cols 71-82 Type of site (one of the following: pond or lake, reservoir, gravel (or other) pit, river stream, canal, ditch (or rhine or dyke), estuary, sea-shore or give details); cols 83-86 Year; cols 87-88 NB (nonbreeder) or 'space B' (breeder); 10 x (2 cols for Day, 2 cols for Month and 5 cols for count, all right justified numbers); 70 cols for notes; 2 cols for code (T=Pair on territory, but without nest, N=Pair with nest, B=Pair with cygnets, D=Pair known to have nested, but failed); 1 space; 4 cols of code for habitat
Other directories (progs oldprogs swanprogs) are mostly (or entirely) FORTRAN programs originally written by Jeremy Greenwood to analyse the data.

The directory Miscellaneous containing various reports etc and oddments.

Information held in BTO Archives

1 A4 box contains data cards from breeding records, another contains those for non-breeding records. All cards have been scanned.

Notes on Access and Use

Other information

Notes on Survey Design

While a sample of as high as 50% might seem on the generous side, it was felt that as a first trial of this new technique, which at the time was thought might in the future be applied to other species, the aim should be for a large sample, not just to make the end results more reliable, but also to permit some subsequent testing of sub-sets of the same information.

Specific Issues for Analysis

In order to make comparisons with past censuses, all county results use pre-1974 county boundaries.